

PATENT COOPERATION TREATY

**From the
INTERNATIONAL SEARCHING AUTHORITY**

To:

PCT

TRANSLATION PROJECT

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

		Date of mailing (day/month/year)	See form PCT/ISA/210
Applicant's or agent's file reference MA71002		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/DE2004/002575	International filing date (day/month/year) 22.11.2004	Priority date (day/month/year) 25.11.2003	
International Patent Classification (IPC) or both national classification and IPC E02F3/43			
Applicant BOSCH REXROTH AG			

1. This opinion contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the opinion
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I	Basis of this opinion
	<p>1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p> <p>2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <ol style="list-style-type: none">a. type of material<p><input type="checkbox"/> a sequence listing <input type="checkbox"/> table(s) related to the sequence listing</p>b. format of material<p><input type="checkbox"/> in written format <input type="checkbox"/> in computer readable form</p>c. time of filing/furnishing<p><input type="checkbox"/> contained in the international application as filed. <input type="checkbox"/> filed together with the international application in computer readable form. <input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p> <p>3. <input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p> <p>4. Additional comments:</p>

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2	YES
	Claims	1	NO
Inventive step (IS)	Claims	2	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-2	YES
	Claims		NO

2. Citations and explanations:

1 Novelty and inventive step

1.1 Using the wording of independent claim 1, figures 4 and 5 of document GB-A-1513328 (D1) show a hydraulic control arrangement for mobile equipment, having a bucket (9) which is held on a boom (2) that can be pivoted by means of a boom cylinder (5) and which can be pivoted by means of a bucket cylinder (10) which can be actuated by a bucket control unit (32), it being possible to feed back the position of the bucket to an alignment control device (20, 53-58, 45, 47), which can be used to actuate the bucket cylinder (10) (see fluid flows P10 and P12), by means of a transmission element (16-19), and the alignment control device (20, 53-58, 45, 47) having an operating head (20, 54, 55, 58, 60) which is operatively connected to the transmission element (16-19) and whose change in position when the bucket (9) is pivoted can be converted into a control signal by a control device (45, 47) in order to keep the bucket (9) at a setpoint angular position, it being possible

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to change a basic position of the operating head (the basic position of the coupling element 54 and the linkage relative to one another is changed by connecting said coupling element to said linkage by a pin 55), and the transmission element (16-19) is connected to the operating head (54, 55, 58, 60) in such a way that both pivoting the bucket (9) downwards and pivoting the bucket upwards out of its setpoint angular position results in the position of the operating head (54, 55, 58, 60) changing, so that a control signal (mechanical coupling to the valves 45 and 47) for returning the bucket (9) to its setpoint angular position can be emitted to the bucket cylinder (10, via lines 40, 41, fluid flows P10, P12 in figure 4, or P13 and P16 in figure 5) as a function of this change in position, and the operating head (54, 55, 58, 60) can also be moved back in the direction of its preset basic position (by means of springs in the unit 53).

All of the features of claim 1 are at least implicitly known from D1. The claimed subject matter is therefore not novel (PCT Article 33(1) and (2)). Furthermore, this subject matter is known from documents US-A-3872990 (D2) and US-A-3032215 (D3) in a manner which is prejudicial to novelty.

1.2 The subject matter of claim 2 is not anticipated by any of the available prior art documents and is therefore novel (PCT Article 33(1) and (2)). The technical effects which result from the features defined in claim 2 can be summarized as follows:

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- only one bucket control unit is needed to actuate the bucket cylinder, which can be actuated by a pilot control device of the alignment control device or by the manual control system;
- this reduces the pipework of the load circuit and allows a modular construction of the control system.

The objective technical problem can be formulated as follows:

- simplifying a hydraulic control circuit of this type.

The available prior art does not contain any teaching which would cause a person skilled in the art who is faced with this problem to arrive at the claimed subject matter of claim 2. The subject matter of claim 2 therefore meets the requirements of PCT Article 33(1) and (3).

D1, D2 exhibit mechanically controlled and articulated valves without such a "pilot control device".

Although US-B1-6561751 exhibits a pilot control circuit with an electronic controller which evaluates sensor signals and emits corresponding control signals, there is no "operating head" here whose basic position can be changed.

EP-A2-1362958 exhibits a sensor which is connected to the equipment and actuates a closed-loop control system by means of changes in acceleration of said equipment; there is no operating head in the sense of the application here either.

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WO02/081828 has been assessed in the description and does not allow closed-loop control of the bucket in both directions when the boom is lowered or raised; DE-U-9416800 also exhibits only control in one direction; in addition, the position of the control lug during operation cannot be changed.

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

- 2.1 Various reference signs have not been correctly referenced in figure 1 (44 and 46) or have not been mentioned (20) (PCT Article 6).

- 2.2 The application contains references which have not been used consistently throughout the application (claims and description) (PCT Rule 10.2) and are therefore unclear (PCT Article 6).
For example, claim 1 defines a "control device (30)" and claim 2 defines a "pilot control device (30)".

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

3 The wording of claim 1 attempts to define the subject matter (hydraulic control arrangement) using the features of a second subject matter (mobile equipment) which is not part of the claimed subject matter (PCT Guidelines Part II, paragraph 5.37). This objection could be overcome by changing the subject matter to "mobile equipment having a hydraulic control arrangement...", or exactly defining the interfaces between the features of the "mobile equipment" and the features of the "hydraulic control arrangement".